

The Role of Microcredit Program and Micro Enterprises in Poverty Reduction (Peranan Program Kredit Mikro dan Perusahaan Mikro dalam Mengurangkan Kemiskinan)

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ABSTRACT

This study analyzes the technical efficiency micro-enterprises in agricultural sector and its determinants. It further investigate the effect of the microcredit program of Kredit Perniagaan Rakyat (KUR) on the efficiency of micro-enterprises in East Java Indonesia hence the poverty reduction. In achieving the aforementioned objectives, three methods are employed namely Data Envelopment Analysis (DEA), Tobit Regression, and Logistic Regression. The estimation results of the Micro Enterprises efficiency using DEA shows that under the assumption of Variable Return to Scale 62 percent of the samples have reached full efficiency. However, under the assumption of Constant Return to Scale, 28 percent of the samples have reached full efficiency.. The factors that influence the efficiency based on tobit regression analysis are profit, asset, credit amount, KUR access, realization tempo, age, labor, and business location. Furthermore, factors affecting poverty status based on logistic regression analysis are income, gender, KUR access, and number of household.

Keywords: Agriculture; microcredit; efficiency; micro-enterprises; poverty
JEL Codes: D13, D24, G51, I32, I38, O120

ABSTRAK

Kajian ini menganalisis kecekapan teknikal perusahaan-mikro dalam sektor pertanian dan faktor penentunya. Ia seterusnya mengkaji kesan program mikrokredit Kredit Perniagaan Rakyat (KUR) ke atas kecekapan perusahaan-mikro di Jawa Timur Indonesia seterusnya pengurangan dalam kemiskinan. Untuk mencapai objektif yang disebutkan di atas, tiga kaedah digunakan, iaitu "Data Envelopment Analysis" (DEA), Regresi Tobit, dan Regresi Logistik. Hasil anggaran kecekapan Perusahaan Mikro menggunakan DEA menunjukkan bahawa di bawah andaian Skel Pulangan Berubah 62 peratus dari sampel telah mencapai kecekapan sepenuhnya. Namun, di bawah andaian Pulangan Skala Malar, 28 peratus dari sampel mencapai kecekapan sepenuhnya. Faktor-faktor yang mempengaruhi kecekapan berdasarkan analisis regresi tobit adalah keuntungan, aset, jumlah kredit, akses KUR, tempo realisasi, usia, tenaga kerja, dan lokasi perniagaan. Tambahan lagi, faktor yang mempengaruhi status kemiskinan berdasarkan analisis regresi logistik adalah pendapatan, jantina, akses KUR, dan bilangan isi rumah.

Kata kunci: Pertanian; mikrokredit; kecekapan; perusahaan-mikro; kemiskinan

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INTRODUCTION

The economy of East Java Province largely depends on the manufacturing, trade and agriculture sectors which contribute 74% of the provincial economy. Although the agricultural sector has a high contribution to East Java's economy, more than 60% of the poorest households in East Java work in the agricultural sector with employment absorbed in the agricultural sector.

The absorption of labor in the agricultural sector is 44.8% of the total labor in East Java (World Bank 2011). The level of productivity and low rates of return in the agricultural sector are the reasons why the proportion of poverty in districts tends to have higher levels of poverty than in cities. This is the reason for the greater number of poor people in East Java in the districts than in the cities (Central Bureau of Statistics 2013).



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However, despite the various economic potentials that exist, the people who are engaged in the agricultural sector in East Java are mostly in micro-enterprises. Micro enterprise is a business that has a turnover of less than Rp. 300 million. Based on the understanding of micro enterprises there are several obstacles faced in carrying out the production process, so that poverty alleviation is rare. Therefore, East Java needs a revitalization strategy to improve the performance of the agricultural sector, especially micro-agriculture.

Barriers experienced by micro-enterprises according to the World Bank include: (i) the majority of unskilled workers with low levels of productivity, (x) limitations on capital because agriculture is still considered a bank risk, (y) limited land availability, (iv) added value low because of high production costs, (v) narrow market access. A study conducted by Wang (2016) concerning the growth barriers to Small Medium Enterprises in a developing country showed that SMEs consider access to as the most barriers hindering their business growth. External reasons for the dilemma include the high cost of borrowing and a lack of consultant support.

Productivity and low rates of return in the agricultural sector, as well as a higher risk of failure compared to the manufacturing and trade sectors cause agriculture to be considered a risky sector if it experiences difficulties in terms of production, marketing and capital, so farmers have difficulty developing their agricultural businesses. Because the nature and characteristics of micro-enterprises are feasible but not bankable, it causes farmers to face capital problems.

To overcome this problem, the government issued a poverty alleviation program for Micro, Small and Medium Enterprises (Poverty Alleviation Cluster III concerning People's Business Credit (KUR) Number: KEP-15/D.I.M.EKON/10/2011) by strengthening capital through KUR. The KUR Program helps Micro, Small and Medium Enterprises both in groups or individually to assist the poor to escape from poverty so that they can increase their income. The KUR program from the government is a micro credit with the advantage that it has less interest than other types of bank credit. The target of this program is micro-enterprises that have difficulty obtaining regular credit and reaching micro-businesses in remote areas.

Based on the existing phenomenon that agricultural products are products needed by many people, the performance of agricultural sector managers, especially in micro-enterprises, is vulnerable to poverty, so there needs to be interference from the government in strengthening business capital through People's Business Credit (KUR). Most previous studies examined efficiency and the factors that it or efficiency and poverty. This study aims to analyze the technical efficiency of agricultural sector micro-enterprises, determine the factors technical

efficiency and obtain the determinants of poverty from micro entrepreneurs in the agricultural sector.

LITERATURE REVIEW

Novotna and Volek (2015) in their research on production efficiency and performance in the agricultural sector show that above average agricultural enterprises (high growth in labor productivity and assets), regardless of size, have indicators of higher , higher debt, and a lower quick ratio. Nguyen et al. (2019) in their research discussing the production efficiency of rice farming in Hanoi, Vietnam showed that rice farming in Hanoi performed quite good in 2018. The in the performance of each farm can be explained by the characteristics of the farmers (age, education and gender of household head) as well as by certain external factors (support programs or distance to the city center). The results also found that independent learning through experience did not increase the efficiency of agricultural production, while education and training were essential. Similar research on wheat growing farmers found that the variables age, education, farm size, improved seeds, training, and credit had an on the technical efficiency of farmers (Dessale 2019). A study on agricultural efficiency in three years in European Countries by Rusielik and Beata (2020) found that most of the countries had increased efficiency each year. Research on the efficiency of tomato farming in Kenya shows that the efficiency of tomato production is still inefficient. The efficiency value of tomato production using a greenhouse is better than using open land (Mwangi et al 2020). Dube et al. (2018) examined the determinants of inefficiency among potato farmers in Ethiopia and found that owner age, education, land ownership, extension contact, family size, fragmentation, and livestock ownership had a on the inefficiency of potato farmers. Other agricultural efficiency research on red pepper farmers in Ethiopia by Abate et al. (2019) states that factors of age, educational status, land size, land fragment, extension service, credit access, and market information have an on technical efficiency. Efficiency research on farmers in Rwanda by Ngango and Kim (2019) found that the outcome variables showed that the level of education, extension, access to credit, land consolidation, improvement tree varieties, and planting systems would increase farmer's technical efficiency.

Research conducted by Taha (2012) argues that there are positive impacts of microcredit programs on increasing income, expenditure, and increasing the of the recipient's business. Dacuyucy and Lim (2014) state that the factors which poverty in the Philippines are the level of education of household head, number of household members, age

of household members, positive shock/new jobs with higher/more wages, negative shock/loss of employment/income reduction, negative shock/disaster/poor health, areas, rural areas, one family member with health insurance.

Another study conducted by Chimai (2011) presents the results of research that technical efficiency in sorghum production is by several factors, namely household and agricultural members, access to credit, dependents, scale of food crop production, asset value and income from livestock activities which improve technical efficiency. On the other hand, household size, use of animal design power, farm size and location in low rainfall areas reduce efficiency. Another study by Kaboski and Townsend (2009) suggested that income, consumption, and investment in agriculture increased among micro credit recipients, as well as overall wage increases in a village in Thailand. Furthermore, Fadzim et al. (2016) argue that factors such as the ratio of labor according to land size, farmer experience, recording, basic knowledge of cocoa farming and the status of farmers involved in cocoa cultivation are important determinants of efficiency among smallholder cocoa farmers in Malaysia. Tenaye (2020) conducted research on smallholder farmers in Ethiopia found that policies, education level of family heads, number of family members, size of land fragmentation, soil quality, credit, extension service, job, and crop sharing the efficiency of smallholder farmers. Mwangi et al. (2020) also stated that household size, types of seeds, fertilizers, production system, extensions and market information had a positive on the technical efficiency of tomato farmers. Another study by Ogunmodede and Awotide (2020) found that factors that had a positive on gross production were experience, education level, costs for worker salaries, seeds, fertilizers, and land size. Meanwhile, the

A study on household poverty was conducted by Khairati and Syahni (2020) in West Sumatra, Indonesia. The results of the study using logistic regression show that the factors that household poverty are involvement in the family planning program, number of family members, age of the head of the family, education of the head of the family, and the skills of the head of the family. The same study by Adeleke et al. (2020), the logistic regression results found that the age of the head of the household, the number of family members and days lost to sickness increased the incidence and severity of poverty among farm households, while access to school and electricity reduced the incidence of poverty and severity among agricultural households. Islam et al. (2017) in their research found that the factors that poverty in Bangladesh are age, rural-urban distribution, marital status, disability, remittances, education, region.

DATA AND METHODS

In this study, sample determination was done by Purposive Sampling. To determine the size of the research sample from the population, the Slovin formula can be used by Sevilla et al. (1993) in Pratiwi (2010).

$$n = \frac{N}{1 + Ne^2}$$

where,

n = Sample size

N = Population size

e = The desired critical value (percentage of tolerance due to inaccuracy because of population sampling error) is 10%

If the required mistake rate (e) is 10% with the micro enterprise population in East Java that is N = 6,825,931, the number of samples studied is as follows:

$$n = \frac{6,825,931}{1 + 6,825,931(0.1)^2} = 99.99$$

Based on the Slovin formula above, this research uses minimum 100 samples of micro-enterprises that were taken with a standard expenditure of Rp. 321,761 per month per person. Based on the scope of the study, samples were taken from 38 districts/cities in East Java Province. However, not all districts / cities in East Java were sampled, namely only seven districts/cities. The criteria for the selection of seven districts/cities are based on representatives of three levels of high, medium and low Gross Regional Domestic Product. To obtain research data, a survey was carried out directly at the location with a prepared questionnaire that was conducted in September 2016.

Requirements for respondents are the owner micro enterprises in the agricultural sector who receive micro credit from the KUR program and non-KUR micro credit. Micro Enterprises according to Law no. 20 of 2008 is a person who has a net worth of not more than IDR 50,000,000 (USD 3.349, USD 1=Rp 14.929), excluding land and buildings for business or has annual sales of at most Rp 300,000,000 (USD 20.094,44, USD 1=Rp 14.929).

MODEL FRONTIER DEA (DATA ENVELOPMENT ANALYSIS)

Data Envelopment Analysis (DEA) is an efficiency boundary method using a non-parametric approach that uses a linear programming model to calculate the output and input ratios, and measures the relative efficiency of the unit. The DEA has a production unit called the Decision Making Unit (DMU) where the DEA efficiency score produced consists of 0-100 percent or 0-1. Data Envelopment Analysis measures the technical efficiency from one input and one output to multi-inputs and multi-outputs by using the relative efficiency value as the input

and output ratio. This output-oriented model was chosen because the production capacity of micro enterprises is smaller than the level industry, so the required input is also small and the input costs are difficult to suppress.

This study uses the DEA model based on O'Donnell et al. (2008), as follows:

$$\begin{aligned}
 & \text{Max } \phi_i, \\
 & \quad \phi_i, \lambda_i \\
 \text{St } & \phi_i y_i - Y \lambda_i \leq 0, \\
 & X \lambda_i - x_i \geq 0, \\
 & j' \lambda = 1 \\
 & \lambda_i \geq 0
 \end{aligned} \tag{1}$$

where y_i = output of the i micro enterprises; x_i = $N \times 1$ vector of input quantity from the i -enterprise; $Y = Y = L_k \times 1$ vector of the total output of L_k enterprises; $X = N \times L_k$ vector of input quantity for all L_k farmers; j = a constant $L_k \times 1$ vector; $\lambda = L_k \times 1$ weighting vector; ϕ_i = a scalar where the value is more than 1 or equal to 1.

Furthermore, the output-oriented DEA model assuming CRS is:

$$\begin{aligned}
 & \text{Max } \phi, \\
 \text{St } & -\phi y_i + Y \lambda \geq 0, \\
 & X_i - X \lambda \geq 0, \\
 & \lambda \geq 0
 \end{aligned}$$

where ϕ is the constant vector 1×1 ; $1 < \infty$; 1 shows the proportion of output increases that can be achieved by the DMU with the same number of inputs. The technical efficiency value is 1 which has a range of values between zero and one.

Coelli, et al. (2005) state that the CRS assumption is suitable if all operate at optimal scale. However, imperfect competition, constraints, unstable production processes, government regulations, weather constraints, and others can cause to be unable to produce optimally. Hence, it is advisable to choose the assumption of variable return to scale (VRS). The CRS assumption is used when a does not operate at an optimal scale and will result in technical efficiency

values that are confused by scale efficiency. Using the VRS assumption can allow the calculation of technical efficient.

TOBIT REGRESSION MODEL

Tobit regression is used to determine the relationship between the independent variable (X) and the dependent variable (Y) with the maximum likelihood estimation. The characteristic of tobit regression is that the dependent variable used (Y) has a discrete scale, which is 0 and has a continuous scale, that is, it has varying values. This data characteristic is known as censored data. Then the selection of observations on the left and right is made based on the minimum and maximum values.

$$\begin{aligned}
 y_i = & \beta_0 + \beta_1 Z_{1i} + \beta_2 Z_{2i} + \beta_3 Z_{3i} + \beta_4 Z_{4i} + \beta_5 Z_{5i} + \beta_6 Z_{6i} \\
 & + \beta_7 Z_{7i} + \beta_8 Z_{8i} + \beta_9 Z_{9i} + \beta_{10} Z_{10i} + \beta_{11} Z_{11i} + u_i
 \end{aligned} \tag{2}$$

where y_i is the efficiency value of the DMU obtained based on the estimation of the DEA model, the coefficient β is the unknown parameter to be estimated, and u_i is the error term. Z_1, Z_2, \dots, Z_{11} are factors assumed to technical efficiency. The variables used in the study using tobit regression are as follows:

LOGISTIC REGRESSION MODEL

The logistic regression model is used because it is a non linear model that produces equations where the dependent variable is categorical (Hosmer & Lemeshow, 2000). In this study using binary logistic regression where there are only two dependent variables (y), $y = 1$ not poor and $y = 0$ poor. This study uses two possible dependent variables (y), namely the event or no occurrence of events, so the model used is binary logistic regression. Two categories of possible dependent variables are indicated by numbers 0 and 1, so that they represent categories resulting from the probability of occurrence of these categories. So the logistic regression model with independent variables can be written as (3).

TABLE 1. Variable of data envelopment analysis

Variables		Unit
Output		
Y	Net income of enterprises (rupiah / month)	Rupiah
Input		
X ₁	Capital	Rupiah
X ₂	Cost of raw materials (rupiah / month)	Rupiah
X ₃	Supporting costs (rupiah / month)	Rupiah
X ₄	Value of machine (rupiah / month)	Rupiah
X ₅	Total labor	Person

TABLE 2. Variables for Tobit Regression Analysis

Variables	
Z_1	
$Z_2 = \text{Age}$	Age of enterprises owner (in years)
$Z_3 = \text{Education}$	Education of enterprises owner 1 = \geq High School 0 = Junior High School and below
$Z_4 = \text{Business Experience}$	Business Experience of enterprises owner (years)
$Z_5 = \text{Assets}$	Assets for business
$Z_6 = \text{Gender}$	Gender of Entrepreneur Owner 1 = Male 0 = Female
$Z_7 = \text{Labor}$	Number of Labor*
$Z_8 = \text{Business Location}$	Business Location 0 = District (Kabupaten) 1 = City (Kota)
$Z_9 = \text{Credit amount}$	Credit amount of enterprises
$Z_{10} = \text{Access to the Micro Credit}$	Access to the Micro Credit 1 = KUR recipient 0 = Non KUR recipient
$Z_{11} = \text{Credit realization time}$	Credit realization time: 1 = ≤ 2 weeks 0 = > 2 weeks

* robustness test. efficiency. In the estimation of the likelihood ratio there is no need for a

TABLE 3. Variables for Logistic Regression Analysis

Variables	
$X_1 = \text{Number of household members}$	Number of household members
$X_2 = \text{Income}$	Income of household head (rupiah)
$X_3 = \text{Education}$	Education of household head: 1 = \geq Senior High School 0 = Junior High School and below
$X_4 = \text{Geographical Location}$	Geographical Location 1 = City (Kota) 0 = District (Kabupaten)
$X_5 = \text{House area}$	House area (in m ²)
$X_6 = \text{Gender}$	Gender of Household head 1 = Male 0 = Female
$X_7 = \text{Household expenditure}$	Household expenditure (rupiah)
$X_8 = \text{Access to the Micro Credit}$	Access to the Micro Credit 1 = KUR recipient 0 = Non KUR recipient
$X_9 = \text{Technical Efficiency of Micro Enterprises}$	Technical Efficiency of Micro Enterprises 1 = $0 < \text{Efficiency} \leq 0,5$ 0 = $0,5 < \text{Efficiency} \leq 1$

$$\begin{aligned}
 y_i &= \ln\left(\frac{P_i}{1-P_i}\right) \\
 &= \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 \\
 &\quad + \alpha_6 X_6 + \alpha_7 X_7 + \alpha_8 X_8 + \alpha_9 X_9 + u_i
 \end{aligned}
 \tag{3}$$

where y_i is the probability of categories 0 and 1 namely $y = 1$ not poor and $y = 0$ poor obtained based on poverty line estimation according to East Java Central Bureau of Statistics, P_i is the chance of a successful event, the coefficient β is the unknown parameter to be estimated, and u_i is an error term. X_1, X_2, \dots, X_{11} are factors that are thought to the probability of poverty status. The variables used in this study using logistic regression are as follows:

HYPOTHESIS TESTING

testing is done to prove that the independent variables individually and simultaneously have a on the dependent variable. The null hypothesis (H_0) that the independent variable simultaneously does not the dependent variable that can be written:

$$H_0 : \beta_1 = \beta_2 = \dots = \beta_k = 0$$

H_1 : At least one regression coefficient is not equal to zero

Furthermore, the estimation of the tested model partially with the null hypothesis (H_0) which mentions that the independent variables partially have no on the dependent variable can be written:

$$H_0 : \beta_i = 0$$

$$H_1 : \beta_i \neq 0$$

The estimated logistic regression parameters that have been obtained are then tested simultaneously with the G. test statistic.

The G test statistics are as follows.

$$G = -2 \ln \left[\frac{\binom{n_1}{n}^{n_1} \binom{n_0}{n}^{n_0}}{\prod_{i=1}^n \hat{\pi}_i^{y_i} (1-\hat{\pi}_i)^{1-y_i}} \right]
 \tag{4}$$

where

n_0 : The number of observations is $Y = 0$

n_1 : The number of observations is $Y = 1$

n : The number of observations

Reject H_0 if $G > \chi^2_{(v,\alpha)}$ (degree of freedom v is the number of parameters in the model without β_0) or H_0 is rejected if the probability value $< \alpha$. After the simultaneous test then a partial test was carried out with Wald test statistics.

Wald test statistics are as follows.

$$W^2 = \frac{\hat{\beta}_i^2}{\left(SE(\hat{\beta}_i)\right)^2}
 \tag{5}$$

H_0 is rejected if $W^2 > X^2_{(1)}$ or p -value $< \alpha$.

DISCUSSION AND RESULTS

TECHNICAL EFFICIENCY

The average technical efficiency is based on the estimation of the Data Envelopment Analysis assuming Variable Return to Scale (TE DEA-VRS) is 0.86 in the efficiency range of 0.12-1 with a standard deviation of 0.24. This efficiency value shows that the average performance that can be achieved by enterprises with available technology in the agricultural sector is 86% of the potential maximum yield of this sector. This situation indicates that the achievement of micro enterprises income in the agricultural sector can still increase by around 14% to achieve maximum efficiency.

However, the average value of micro-enterprises technical efficiency in East Java is lower than 0.86 if calculated using Constant Return to Scale (CRS). The average technical efficiency based on the estimation of the CRS DEA model is 0.73 in the efficiency range 0.1-1 with a standard deviation of 0.3 (Table 4), indicating that even though the micro business agriculture sector generates around 86% of the potential output with the available technology, but they only produce around 73% of the potential output if using CRS calculation. The performance of the agricultural sector in East Java can still be increased by around 27% to achieve maximum output using Constant Return to Scale technology.

TABLE 4. Average technical efficiency of micro enterprises in the agriculture sector

	n	Rata-rata	Min	Maks	Standard Deviasi
TE-DEA VRS*	100	0.86	0.12	1	0.24
TE-DEA CRS*	100	0.73	0.1	1	0.3

*TE = Technical Efficiency; VRS= Variable Return to Scale; CRS= Constant Return to Scale

Source: Data analysis

Distribution of technical efficiency shown in Figure 1 results from the DEA-VRS estimation shows that 100% efficient micro-enterprises (TE = 1) are achieved by 62 enterprises or 62% of the total number of enterprises in the agricultural sector. The remaining 18 (18%) enterprises with technical efficiency levels vary between 0.75 - 0.99, and 20 (20%) enterprises with technical efficiency levels varying between 0.1 - 0.74.

The estimation results of the DEA-CRS indicate that 100% efficiency of micro enterprises agriculture sector is achieved by only 28 enterprises or 28% of the total micro-enterprises in the agricultural sector. The number of micro-enterprises with technical efficiency below 0.75 is 44 micro enterprises or 44% of the total micro-enterprises. Besides that, the technical efficiency level of 0.75-0.99 was achieved by 28 (28%) micro-enterprises.

The level of micro-enterprises technical efficiency in the agricultural sector in this study can still be maximized by the yield potential. The steps that can be taken to increase the micro enterprises technical efficiency level in the agricultural sector is to increase the output produced and also reduce input costs which are a source of micro-enterprises inefficiency. In this context, estimation of the DEA-VRS model provides input targets based on the technology used. Furthermore, to maximize efficiency improvements, it is necessary to analyze the determinants of technical efficiency in the agricultural sector micro-enterprises by using tobit regression.

DETERMINANTS OF EFFICIENCY

This section will discuss the results of estimation of micro enterprises efficiency models based on calculations of micro enterprises efficiency that have been performed previously. The Likelihood Ratio (LR) test is 488.74 with a probability value of 0,000 less than 0.01 (α). This means that the null hypothesis (H_0) is rejected. In other words, the independent variable the dependent

Individually, eight of the eleven independent variables showed a on the level of technical efficiency at levels of 0.1. Each of the variables individually shows a positive impact on the level of technical efficiency, namely assets, credit amount, micro credit access, and credit realization time, while the other three variables, namely age, labor and business location show a negative on the level of technical efficiency. However, there are three variables that indicate an on the micro-enterprises technical efficiency of the agricultural sector, namely, education, experience,

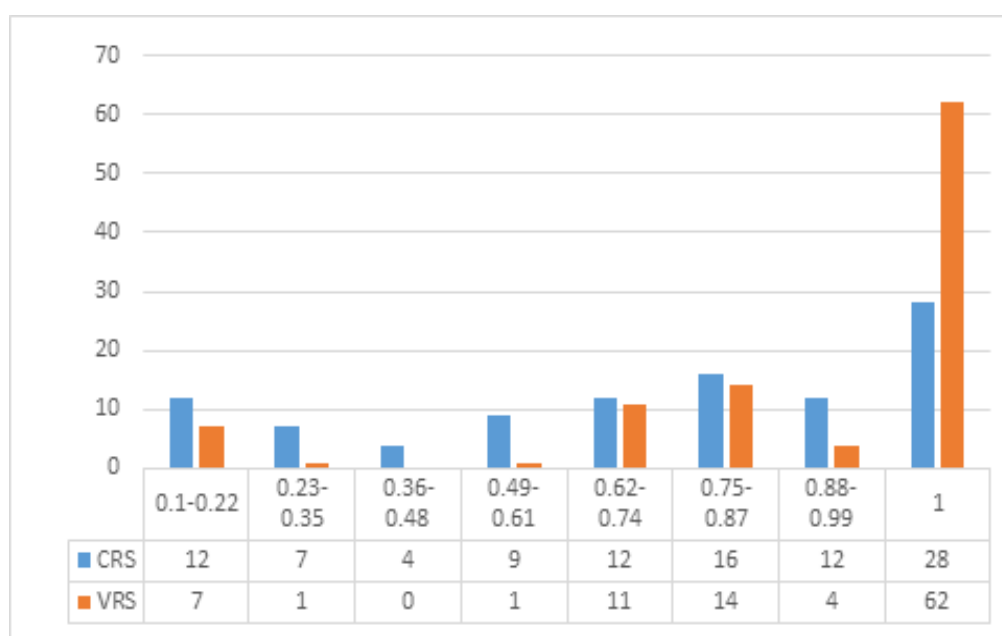


FIGURE 1. Class of Technical Efficiency of Micro Enterprises in the Agricultural Sector
*Source: Data analysis

TABLE 5. Actual Output Average and Agricultural Micro Enterprises Output Target

	Observations	Actual Output	Target Output	Output Changes	
				(Rp)	%
DEA VRS	100	2.544.000	2.935.320	391.320	15,38%
DEA CRS	100	2.544.000	3.451.560	907.560	35,67%

*Source: Data analysis

and gender based on probability values exceeding the level of 0.1. The normality assumption test shows that the probability value of the Jarque-Bera (0.014) statistic is more than α (0.01), so the test results cannot reject the null hypothesis. This proves that the term u_i error has a normal distribution.

Based on the results of the analysis and seen from the sign on the coefficient, a factor can be explained that the increasing business will increase production efficiency. If the owner is getting older, the efficiency will decrease (Adhikari, et al. 2018; Dube, et al. 2018; Abate, et al. 2019). Then, if the assets owned are more and more, it will increase technical

efficiency. The variable number of workers that is less will increase efficiency, this means that it is better to have a few workers with a high level of productivity than many workers but low productivity. The location of the business also has an effect on efficiency because if the business location is getting closer to urban areas or markets, it will be easier to market the products and reduce shipping costs. The variable of the amount of credit will increase the increase in efficiency if it is used maximally in business development (Taha 2012). Access to micro credit has a positive effect (Abate, et al. 2019; Ngango and Kim 2019), namely if entrepreneurs get KUR it will increase efficiency. Lastly, credit realization

TABLE 6. Results of the Maximum Likelihood Estimation of the Agricultural Sector Tobit Regression Model

VariableS		Coefficient	z-Statistic	Probability
Constant	C	0.1430173	3.14	0.002***
	Z1	0.0101388	4.48	0.000***
Age	Z2	-0.001064	-3.48	0.001***
Education	Z3	-0.008335	-1.25	0.215
Experience	Z4	-0.000703	-1.06	0.291
Asset	Z5	0.0260858	5.66	0.000***
Gender	Z6	-0.002109	-0.51	0.61
Labor	Z7	-0.08373	-6.24	0.000***
Business Location	Z8	-0.076977	-5.7	0.000***
Amount of credit	Z9	0.0049897	2.74	0.007***
Micro Credit Access	Z10	0.0356166	2.69	0.009***
Credit realization time	Z11	0.0329668	2.61	0.011**
LR			488.74	0.000***
Log Likelihood			175.9996	
Jarque-Bera			0.963	0.014

*Source: Data analysis

TABLE 7. The Maximum Likelihood Estimation Results of Logistic Regression Model

Variables		Coefficient	Odds Ratio	z-Statistic	Probability
Constant	C	-6.6137	0.00134	-2.01	0.045
Number of Household member	X1	-0.6509	0.52154	-1.97	0.049*
Income	X2	0.128	1.13655	1.66	0.096*
Education	X3	0.3489	1.41758	0.22	0.827
Geographical Location	X4	1.2555	3.50965	0.97	0.331
House Area	X5	0.0077	1.00776	0.9	0.367
Gender of Household Head	X6	4.2708	71.5844	3.03	0.002*
Expenditure	X7	-0.157	0.98441	-0.77	0.444
Micro Credit Access	X8	3.5161	33.6529	2.6	0.009*
TE	X9	2.4684	11.8042	1.73	0.084*
LR				107.82	0.000
Pseudo R2				0.792	

*Source: Data analysis

time, if the time is getting shorter than 2 weeks then it will increase efficiency.

DETERMINANTS OF MICRO ENTREPRENEUR'S POVERTY

The results of the test indicate that the independent variables have a on the dependent variable. Simultaneously independent variables have a t on poverty status with a level of 0.1, as evidenced by a probability value of 0,000 for the LR 488.74 statistical test less than α (0.01). Based on the Likelihood Ratio (LR) test H_0 rejected.

Table 7 shows that individually, of the eight variables have on the dependent variable, namely, poverty status at 0.1 levels of Each of the four variables shows a positive impact on poverty status, namely, income, gender, and micro credit access, while household member variable shows a negative impact on status of poverty. However, there are three variables that have no on poverty status, namely, education, house area, and expenditure as evidenced by probability values above

The odds ratio value of the income variable is 1.13655, which means that every one unit increase in income, the opportunity for entrepreneurs to be not poor increases. Increased income means more prosperous and can increasingly meet family needs. Meanwhile, in the district, the citizens are mostly working in the agricultural sector. Then, the gender variable with an odds ratio of 71.5844, which means that if the head of the household is male, it is 71.5844 times more likely to be non-poor than the female head of household (Mohamoud and Bulut 2020). The variable access to micro credit has a positive on poverty status with an odds ratio of 33.6529. The probability that entrepreneurs who received KUR were not poor were 33.6529 times than those who received non-KUR credits. The that looks is that the KUR credit is a government program with easy terms and low interest which greatly eases the burden on entrepreneurs compared to other commercial credit. The last variable, namely the number of family members, has a negative on poverty status. The odds ratio is 0.52154, that is, if there are more family members 1 unit, the risk of being not poor is 0.52154 times. The is in line with previous research by Mohamoud and Bulut (2020) and Woldie et al. (2020). This means that the more family members, the less likely they are to be poor. The more family members, the more needs that must be met. If the addition of family members is not accompanied by an increase in income, basic needs are not met and are more vulnerable to poverty. Family size is a concern of the Indonesian National Family Planning Coordinating Agency (BKKBN) to make a two-child family planning program sufficient, as one of

the objectives, in order to improve the welfare of small families.

CONCLUSION

Based on DEA estimation, the average of technical efficiency DEA-VRS is 0.86 and DEA-CRS is 0.73. Micro-enterprises in the agricultural sector which have technical efficiency equal to 1 in DEA-VRS are 62 micro-enterprises and on DEA-CRS are 28 micro-enterprises. This results shows that the technical efficiency of the agricultural sector of KUR recipient micro-enterprises in East Java can still be improved. In line with this, real income from entrepreneurs still tends to increase to reach maximum potential. The distribution shows that the micro enterprises technical efficiency in the agriculture sector in East Java makes it possible to approach the frontier (maximum potential). Then the results of tobit regression analysis determined the variables that the efficiency of the micro enterprises in the agricultural sector, namely assets, credit amount, micro credit access, and the credit realization time, age, labor and business location. The logistic regression analysis concluded that the factors that have on poverty status are income, gender, micro credit access, and household members.

Agricultural micro-enterprises that have efficiency approaching 1 meaning that increasing output and input that are the same, can the increasing income so that it can improve the welfare of micro-entrepreneurs and reduce poverty. To be able to improve efficiency it is necessary to know the factors that efficiency; these factors can be individual factors such as age, education, experience, gender, family factors such as household members, house area, and business factors such as income, expenditure, micro credit access, credit realization time. These factors can be maximized so that efficiency is achieved. From the factors that efficiency, it can be used again to determine the factors that poverty status. Based on this, it is known that the factors that both poverty and efficiency, namely micro credit access. These factors efficiency and poverty which can be maximized to achieve micro- enterprises efficiency that has an impact on welfare and poverty reduction. However there are other factors outside the analysis that also the efficiency and status of poverty.

This research can contribute to micro-enterprises in order to increase their efficiency based on factors that efficiency. Then the contribution to the government is by knowing factors that poverty can be the basis for decision making in taking poverty reduction policies and as a consideration for the continuation of the KUR program.

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